Remarks

Upon entry of the foregoing amendment, claims 6-10 and 12-19 are pending in the application, with claims 6, 10 and 14 being the independent claims. Claims 1-5 and 11 were previously cancelled.

The specification has been amended to correct an obvious error regarding formula E_1 (Colby formula). Such amendment does not constitute new matter (*see* M.P.E.P. 2163.07.II), and its entry is respectfully requested.

Claims 6, 7, 10 and 14 are currently amended. Specifically, claims 6, 7 and 14 are amended to recite the weight ratios of trifloxystrobin to prothioconazole. Support for the amendments to claims 6, 7 and 14 is found in the originally filed claim 2, and the specification as filed at page 3, lines 1-7. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and that they be withdrawn.

I. Supplemental Information Disclosure Statement

Applicants note that a Third Supplemental Information Disclosure Statement is submitted accompanying the Amendment and Reply. Applicants respectfully request the Examiner initial and return a copy of Information Disclosure Statement Forms.

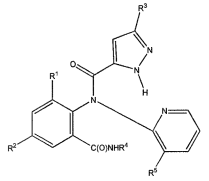
II. Rejections under 35 U.S.C. § 103(a)

A. Rejection over Zimmerman

Claims 6-19 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Zimmerman (U.S. Patent No. 7,179,824 B2) ("Zimmerman"). Applicants respectfully traverse this rejection.

The cancellation of claim 11 renders the rejection of claim 11 moot.

As discussed in detail in Applicants' Amendment and Reply dated August 31, 2009, Zimmerman is directed to a pesticidal compound of Formula I (its N-oxide or salt), a composition comprising a pesticidal compound of Formula I, and its use in controlling arthropods:



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(Zimmerman at col. 1, line 50, through col. 2, line 56.) Zimmerman also generally discloses that the claimed compounds can be mixed with one or more other biologically active compounds or agents including insecticides, fungicides, nematocides, bactericides, acaricides, growth regulators, chemosterilants, semiochemicals, repellents, attractants, pheromones, feeding stimulants or other biologically active compounds to form a multi-component pesticide. (*Id.* at col. 32, lines 44-52.) Prothioconazole and trifloxystrobin are mentioned along with over 100 other fungicides. (*Id.* at col. 33, lines 15-46; and

lines 41 and 45.) Thus, Zimmerman's compositions ***always*** require a compound of Formula I and one or more (if any) other biologically active compounds or agents. In addition, Zimmerman teaches that certain compounds of Formula I provide excellent level of plant protection (*id.*, Tests A-D, cols. 36-37). Zimmerman does not disclose or provide any reasons for making a combination (or a composition) containing trifloxystrobin and prothioconazole ***without*** a primary essential compound of Formula I. In fact, Zimmerman teaches away from such a combination (or a composition). In sum, Zimmerman does not provide a reason why one would prepare a combination (or a composition) consisting essentially of trifloxystrobin and prothioconazole (as biologically active compounds) as recited in present claims 6-10 and 12-19.

The Examiner has found Applicants' arguments unconvincing allegedly that:

> Applicant's arguments filed 8/31/09 have been fully considered but they are not persuasive, applicant argues the intermediate language precludes other compounds; it does not, because the primary compound of each reference does not interfere with the pesticidal functions of the instant claim; they add to them

(Office Action, page 5.) Applicants respectfully disagree.

Applicants note that the captioned invention is directed to a fungicidal combination or a composition, ***not*** a pesticidal composition as appeared to be understood by the Examiner. Zimmerman states that:

> Compounds of this invention can also be mixed with one or more other biologically active compounds or agents including insecticides, fungicides, . . . to form a multi-component ***pesticide*** giving an even broader spectrum of agricultural utility.

(Zimmerman at col. 32, lines 44-52 (emphasis added).) Thus, at most, Zimmerman discloses that other biologically active compounds or agents (including fungicides) will

not "interfere" with the pesticidal functions of the primary compounds of Formula I disclosed therein. Zimmerman does not disclose that the primary compounds of Formula I would not "interfere" with the fungicidal functions of trifloxystrobin and prothioconazole, as asserted by the Examiner. More importantly, the captioned invention does not require any pesticidal compounds. Accordingly, Applicant respectfully request the Examiner reconsider Applicants' arguments.

In addition, each of claims 6-10 and 12-19 as currently presented requires specific weight ratios of trifloxystrobin to prothioconazole. Zimmerman is completely silent with respect to the weight ratios of trifloxystrobin to prothioconazole as recited in present claims 6-10 and 12-19. Applicants respectfully submit that to establish *prima facie* obviousness of a claimed invention, all claim limitations must be considered (*see* M.P.E.P. 2143.03).

In making the rejection, the Examiner stated that:

> All the critical elements of the instant are disclosed. The amounts and proportions of each ingredient are result effective parameters chosen to obtain the desired effects. It would be obvious to vary the form of each ingredient to optimize the effect desired, depending upon the particular species and application method of interest, reduction of toxicity, cost minimization, enhanced, and prolonged, or synergistic effects.

(Office Action, pages 2 and 3.) Applicants respectfully disagree.

Applicants are aware of the flexible approach for establishing obviousness set out in *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007). However, as cautioned by Judge Rader in a post-*KSR* decision in *In re Kubin*, 561 F.3d 1351 (Fed. Cir. 2009), "where a defendant merely throws metaphorical darts at a board filled with combinatorial prior art possibilities, courts should not succumb to hindsight claims of obviousness." (561 F.3d

at 1359.) In rendering the rejection, the Examiner picked and chose trifloxystrobin and prothioconazole by eliminating the primary essential pesticidal compounds of formula I from Zimmerman. The facts presented in Zimmerman would not have led one of ordinary skill in the art to select just trifloxystrobin and prothioconazole, and the specific weight ratios of trifloxystrobin to prothioconazole, to arrive at presently claimed combinations or compositions. The Examiner's rejection was based on impermissible hindsight.

Accordingly, for at least the reasons stated above and in Applicants' Amendment and Reply dated August 31, 2009, present claims 6-10 and 12-19 are not *prima facie* obvious over Zimmerman. Withdrawal of the rejection is respectfully requested.

B. Rejection over Isenring and Jautelat

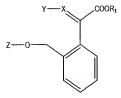
Claims 6-19 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Isenring *et al.* (U.S. Patent No. 6,407,100) ("Isenring") and Jautelat *et al.* (U.S. Patent No. 5,789,430) ("Jautelat").[1] Applicants respectfully traverse this rejection.

The cancellation of claim 11 renders the rejection of claim 11 moot.

a. Summary of the Cited References

Isenring generally discloses compounds of formula I (encompassing trifloxystrobin), which have fungicidal actions and can be used for controlling or preventing fungal attack:

[1] Applicants note that U.S. Patent Nos. 6,407,100 and 5,789,430 are assigned to Bayer Aktiengesellschaft according to the United States Patent and Trademark Office's electronic assignment records, and are owned by Bayer CropScience AG, the assignee of the captioned application.



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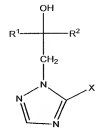
(Isenring, col. 1, lines 8-43; and col. 6, lines 34-37.) Isenring also specifically discloses 158 compounds (Examples 1-7, 7a and 8-157), including trifloxystrobin (Example 12, Table)[2]. (*Id.* at col. 9, line 64, through col. 19, line 66, Tables 1-3.) Isenring further discloses biological activities of some of these compounds against fungi attack. (*Id.* at col. 21, line 21, through col. 23, line 51.) In addition, Isenring generally states that:

> Besides the active compounds of the formula I, the fungicidal compositions according to the invention can also comprise other active compounds, for example other types of fungicidal compositions, insecticidal and acaricidal compositions, bactericides, plant growth regulators and fertilisers. Such combination compositions are suitable for broadening the spectrum of action or for specifically influencing plant growth.

(*Id.* at col. 8, lines 46-53.) However, Isenring does not disclose any particular combinations. Thus, at most, Isenring discloses trifloxystrobin, which can be combined with other active compounds.

Jautelat generally discloses triazolyl derivatives of formula (I) (encompassing prothioconazole), which have microbicidal actions and can be used to control undesirable microorganisms:

[2] The Examiner asserted that Example 24, Table 2 of Isenring is trifloxystrobin (Office Action, page 3). Applicants note that the Examiner is incorrect.



(I)

(Jautelat, Abstract.) Jautelat also specifically discloses 67 compounds, including prothioconazole (Preparation Example 1) (*id.* at col. 14, line 27, through col. 21, line 42, Table 1; col. 35, lines 10-20; and col. 38, line 32, through cols. 39 and 40, Table 2). Jutelat further generally states that:

> When used in plant protection, the active compounds according to the invention can be used as such or, in their formulations, also as a mixture with known fungicides, bactericides, acaricides, nematicides or insecticides, for example so as to widen the spectrum of action or to prevent the build up of resistance. In many cases, this results in synergistic effects, i.e. the activity of the mixture exceeds the activity of the individual components.

(*Id.* at col. 32, lines 24-31.) Jautelat then lists numerous fungicides, bactericides, insecticides, acaricides and nematicides as "suitable components" for the mixture, none of which is trifloxystrobin. (*Id.* at col. 32, line 32, through col. 34, line 23.) In addition, Jautelat does not disclose any particular mixtures. Thus, at most, Jautelat discloses prothioconazole, which can be combined with a laundry list of other active compounds.

b. Claims 6-10 and 12-19 Art Not Prima Facie Obvious over the Cited References

In rendering the rejection, the Examiner stated that Isenring teaches trifloxystrobin as fungicide; and Jautelat teaches prothioconazole and tebuconazole as microbicides. According to the Examiner:

> One would expect an enhanced effect by application of two fungicides, an increased range of fungi species controlled and/or a decreased concentration of one or both fungicides.
>
> * * *
>
> It would have been obvious. . . to combine known compounds for the same purpose in expectation to get a better activity. Since all the above cited reference teach the active compounds as claimed it is prima facie obvious to combine two or more compositions each of which is taught by the prior art to be useful for the same purpose in order to form a new composition that is to be used for the very same purpose; the idea of combining them flows logically from their having been individually taught in the prior art. In re Kerkhoven, 205 USPQ 1069.

(Office Action, pages 4 and 5.) Applicants respectfully disagree.

As discussed above, taken together, Isenring and Jautelat, at most, teach that trifloxystrobin can be combined with other active compounds; and prothioconazole can be combined with other active compounds. However, there is nothing in the cited references that would provide a reason for making a combination or a composition consisting essentially of trifloxystrobin and prothioconazole as recited in present claims 6-10 and 12-19.

The Examiner cited *In re Kerkhoven* to support the rejection. Applicants respectfully submit that the facts in the captioned application are far removed from *In re Kerkhoven*, and thus its holding should not be broadly applied to the present invention for the following reasons.

In re Kerkhoven dealt with the patentability of claims directed to a process of preparing a spray-dried detergent by mixing together spray-dried nonionic detergents and anionic detergents. *In re Kerkhoven*, 205 U.S.P.Q. 1069 (CCPA 1980). According to the United States Court of Customs and Patent Appeals ("CCPA"), the appealed claims

"require no more than the mixing together of two conventional spray-dried detergents." *Id.* at 1072. Applicants note that the appealed claims in *In re Kerkhoven* only require combining a spray-dried nonionic detergent with a spray-dried anionic detergent, and do not require combining a specific nonionic detergent with a specific anionic detergent. Hence, the holding of *In re Kerkhoven* cannot be broadly applied to the present invention because, contrary to the facts in *In re Kerkhoven*, the present claims 6-10 and 12-19 require combining two specific fungicides, trifloxystrobin and prothioconazole, within specific ranges of weight ratios. In sum, because the facts in *In re Kerkhoven* are not analogous to that of the captioned invention, its holding should not be broadly applied to the captioned invention.

Furthermore, each of claims 6-10 and 12-19 as currently presented requires specific weight ratios of trifloxystrobin to prothioconazole. Neither Isenring, nor Jautelat discloses or provides a reason to select the weight ratios as recited in present claims 6-10 and 12-19. However, according to the Examiner:

> One would be able to determine the ratio of the two fungicides, as exemplified by each reference, by simple testing with expectation of success in identifying optimal ratio to control the fungus desired.

(Office Action, page 4.) Applicants respectfully disagree.

Isenring and Jautelat do not exemplify how to determine the ratio of two fungicides. To the contrary, Isenring and Jautelat only discloses fungicidal activity of trifloxystrobin alone (*see* Isenring, cols. 21-23, Examples B1, B2 and B4-B7), and fungicidal activity of prothioconazole alone (*see* Jautelat, cols. 41-46, Examples A-G). In sum, in rendering the rejection, the Examiner selected trifloxystrobin disclosed in

Isenring and prothioconazole disclosed in Jautelat, and found the recited weight of trifloxystrobin to prothioconazole based on impermissible hindsight.

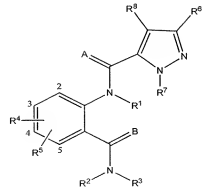
Accordingly, for at least the reasons stated above, present claims 6-10 and 12-19 are not *prima facie* obvious over Isenring and Jautelat. Withdrawal of the rejection is respectfully requested.

C. Rejection over Berger

Claims 6-19 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Berger *et al.* (U.S. Patent Appl. Pub. No. 2004/0209923 A1) ("Berger"). Applicants respectfully traverse this rejection.

The cancellation of claim 11 renders the rejection of claim 11 moot.

As discussed in detail in Applicants' Amendment and Reply dated August 31, 2009, Berger is directed to pesticidal compounds of Formula I (their N-oxide or salt), compositions comprising a pesticidal compound of Formula I, and their use for protecting a propagule or a plant grown therefrom from an invertebrate pest:



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(Berger, paras. 0006-0025.) Berger also generally discloses a composition comprising a compound of Formula I and at least one other biologically active compound or agent,

including insecticides, fungicides, nematocides, bactericides, acaricides, growth regulators, chemosterilants, semiochemicals, repellents, attractants, pheromones, feeding stimulants or other biologically active compounds. (*Id.*, paras. 0259 and 0273.) Prothioconazole and trifloxystrobin are mentioned along with over 100 other fungicides. (*Id.*) As such, the disclosure of Berger is very similar to that of Zimmerman.

For the similar reasons stated above in Zimmerman, present claims 6-10 and 12-19 are not *prima facie* obvious over Berger because: (1) Berger does not disclose or provide any reasons for making a combination or a composition containing trifloxystrobin and prothioconazole ***without*** a primary essential compound of Formula I; and (2) Berger does not disclose the weight ratios of trifloxystrobin to prothioconazole recited in claims 6-10 and 12-19 as currently presented. Withdrawal of the rejection is respectfully requested.

D. The Record Provides Clear Evidence of Unexpected Results That Rebut Any Prima Facie Case of Obviousness

According to the M.P.E.P., objective evidence (criticality or unexpected results, *etc.*), when timely presented, must be considered by the Examiner in determining the issue of obviousness of claims for patentability under 35 U.S.C. § 103. *See* M.P.E.P. 716.01(a) (citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983)). However, in rendering the rejections in this Office Action, the Examiner did not address the evidence of unexpected results of the presently claimed invention as detailed in Applicants' Amendment and Reply of August 31, 2009.

Applicants reiterate for at least the reasons detailed in Applicants' Amendment and Reply of August 31, 2009, that even assuming, *arguendo*, that a *prima facie* case of

obviousness was established, it is overcome by the synergistic, unexpected results obtained with the claimed combinations (compositions). Particularly, the specification as filed includes 2 examples (Examples A and B) to demonstrate the synergistic effect obtained with presently claimed combinations.

a. Leptosphaeria Nodorum Test

In this study, young wheat plants were treated with trifloxystrobin (100 g/ha), (100 g/ha) prothioconazole individually, or with a preparation of the claimed combination (54 g/ha trifloxystrobin + 46 g/ha prothioconazole, wherein the ratio of trifloxystrobin to prothioconazole was 1:0.85 (54 g/ha : 46 g/ha)). The treated plants were then sprayed with a spore of Leptosphaeria nodorum. The efficacy of fungi control was evaluated 10 days after the inoculation. (Specification at pages 8 and 9, Example A and Table A.)

As shown in Table A, when applied individually at 100 g/ha, efficacies of 67% and 56% were observed for trifloxystrobin and prothioconazole, respectively. [3] Assuming a linear dose-response correlation, when applied individually at an application rate of 54 g/ha, trifloxystrobin has an expected efficacy of about 36% [(54/100) x 67%]; and when applied individually at an application rate of 56 g/ha, prothioconazole has an expected efficacy of about 26% [(46/100) x 56%], with a sum of the expected efficacy of trifloxystrobin and prothioconazole being 63% (36% + 26% = 63%). In comparison, as shown in Table A, an efficacy of 89% was observed when the claimed combination was applied. Thus, the efficacy of the claimed combination (89%) was much greater

[3] An efficacy of 0% corresponds to that of control, and an efficacy of 100% indicates that no infection was observed. (Specification at page 8, lines 21-23.)

than the sum of the efficacy of trifloxystrobin and prothioconazole applied individually (63%). Therefore, the claimed combination (the weight ratio of trifloxystrobin to prothioconazole being 1:0.85) has a synergistic effect against Leptosphaeria nodorum on wheat plants, according to the definition of synergism in *In Re Luvisi*.

Alternatively, the synergistic effect of the present invention as exemplified in Example A can be explained in a different way. As shown in Table A, when applied individually at 100 g/ha, efficacies of 67% and 56% were observed for trifloxystrobin and prothioconazole, respectively. Therefore, trifloxystrobin is a more potent fungicidal compound against Leptosphaeria nodorum as compared to prothioconazole. While keeping the application rate at 100 g/ha, but substituting the more potent trifloxystrobin with 46 g of less potent prothioconazole, the resulted combination had an efficacy of 89%, much greater than that of even the more potent trifloxystrobin applied at 100 g/ha, *i.e.*, 67%. The improved efficacy can only be the result of a synergistic effect between the two compounds, because in the absence of a synergistic effect, the combination would have been expected to have a lower efficacy than that of trifloxystrobin. Therefore, the claimed invention has a synergistic effect against Leptosphaeria nodorum on wheat plants.

b. Puccinia Recondita Test

In this study, young wheat plants were first inoculated with Puccini recondita, and then treated with trifloxystrobin (25 g/ha) and prothioconazole (25 g/ha) individually, or with the preparation of claimed combination (8.5 g/ha trifloxystrobin + 16.5 g/ha prothioconazole, wherein the ratio of trifloxystrobin to prothioconazole was

about 1: 2 (8.5 g/ha : 16.5 g/ha))). The efficacy of fungi control was evaluated 10 days after the inoculation. (Specification at pages 10 and 11, Example B and Table B.)

As shown in Table B, when applied individually, efficacies of 0% and 43% were observed for trifloxystrobin and prothioconazole, respectively. Assuming a linear dose-response correlation, when applied individually at an application rate of 8.5 g/ha, trifloxystrobin has an expected efficacy of 0% [(8.5/25) x 0%]; and when applied individually at an application rate of 16.5 g/ha, prothioconazole has an expected efficacy of about 28% [(16.5/25) x 43%], with a sum of the expected efficacy of trifloxystrobin and prothioconazole being 28% (0% + 28% = 28%). In comparison, as shown in Table B, an efficacy of 71% was observed when the claimed combination was applied. Thus, the efficacy of the claimed combination (71%) was much greater than the sum of the efficacy of trifloxystrobin and prothioconazole applied individually (28%). Therefore, the claimed combination (the weight ratio of trifloxystrobin to prothioconazole being about 1:2) has a synergistic effect against Puccinia recondita on wheat plants, according to the definition of synergism in *In Re Luvisi*.

Alternatively, the synergistic effect of the present invention as exemplified in Example B can be explained in a different way. As shown in Table B, when applied individually at 25 g/ha, efficacies of 0% and 43% were observed for trifloxystrobin and prothioconazole, respectively. Therefore, prothioconazole is a more potent fungicidal compound against Puccini recondita as compared to trifloxystrobin. While keeping the application rate at 25 g/ha, but substituting the more potent prothioconazole with 8.5 g of less potent trifloxystrobin, the resulted combination had an efficacy of 71%, much greater than that of even the more potent prothioconazole applied at 25 g/ha, *i.e.*, 43%.

The improved efficacy can only be the result of a synergistic effect between the two compounds, because in the absence of a synergistic effect, the combination would have been expected to have a lower efficacy than that of prothioconazole. Therefore, the claimed invention has a synergistic effect against Puccini recondita on wheat plants.

As discussed above, Applicants have clearly and convincingly demonstrated (by more than one appropriate method) unexpected synergistic effects obtained from the claimed combination at different mixing ratios of trifloxystrobin to prothioconazole, against different fungi. The unexpected synergist effects overcome the obviousness rejection of claims 6-10 and 12-19, assuming that a *prima facie* case of obviousness was established. Accordingly, Applicants respectfully request the Examiner consider the objective evidence of non-obviousness, and the rejection be withdrawn.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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Date: May 28, 2010

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